



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,119	09/10/2003	Mitsuo Kawasaki	9281-4620	3593

7590 08/22/2005  
BRINKS HOFER GILSON & LIONE  
P.O. BOX 10395  
CHICAGO, IL 60610

EXAMINER
----------

BERNATZ, KEVIN M

ART UNIT	PAPER NUMBER
----------	--------------

1773

DATE MAILED: 08/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/659,119

Applicant(s)

KAWASAKI ET AL.

Examiner

Kevin M. Bernatz

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-19 is/are rejected.
- 7) ☒ Claim(s) 18 and 19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

1. Amendments to claims 1 and 8, cancellation of claim 2, and addition of new claims 9 - 19, filed on May 31, 2005, have been entered in the above-identified application.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Examiner's Comments***

3. The Examiner notes that applicants have apparently included a correspondence from Alps to the attorney of record in the response filed to the PTO. Should applicants wish to remove this paper from the record, applicants should follow the proper procedure for removing a paper inadvertently submitted to the USPTO.

### ***Priority***

4. Applicants' perfection of the claim to priority by submitting a certified translation of the priority document on May 31, 2005 has been accepted.

### ***Claim Objections***

5. Claim 18 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 11. When two claims in an application are duplicates or else are so close in

content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). The Examiner deems that the scope covered by "succession of plated microcrystals" is identical to the scope covered by "overlying plated microcrystals", given that the base claim recites that this is a microcrystal layer.

6. Claim 19 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The Examiner notes that claim 8, from which claim 19 ultimately depends, already recites that the grain boundaries are located between the crystal grains. While the verbiage in claim 19 is different than that used in claim 8, the Examiner deems that the scope covered by claim 19 is identical to claim 18, hence failing to further limit claim 18.

#### ***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 15 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The terms "substantial portion" in claim 15 and "substantially sulfur-free" in claim 16 are relative terms which render the claims indefinite. These terms are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. For purposes of evaluating the prior art, the Examiner has given the term(s) the broadest reasonable interpretation(s) consistent with the written description in applicants' specification as it would be interpreted by one of ordinary skill in the art. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); *In re Donaldson Co., Inc.*, 16 F.3d 1190, 1192-95, 29 USPQ2d 1845, 1848-50 (Fed. Cir. 1994). See MPEP 2111. Specifically, "substantial portion" must be a measurable amount and "substantially sulfur-free" is restricted to impurity-level amounts of sulfur or less.

### ***Claim Rejections - 35 USC § 102***

9. Claims 1 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Funayama et al. (U.S. Patent App. No. 2003/0197982 A1) for the reasons of record as set forth in Paragraph No. 7 of the Office Action mailed on February 11, 2005.

Regarding the amended language of claim 1, Funayama et al. disclose a plurality of columnar crystal grains provided side-by-side in a film surface direction with grain boundaries extending in the film thickness direction (*Paragraph 0148; Figure 16 and 17 and relevant disclosure thereto*).

Regarding the limitation(s) "plated", the Examiner notes that this limitation(s) are/(is a) process limitation(s) and is/are not further limiting in terms of the structure resulting from the claimed process. Specifically, in a product claim, as long as the prior art product meets the claimed structural limitations, the method by which the product is formed is not germane to the determination of patentability of the product unless an unobvious difference can be shown to result from the claimed process limitations. In the instant case, regardless of how the film is deposited (e.g. plating or sputtering), the final structure of the film is substantially identical – a magnetic film comprising Co and Fe wherein columnar crystals extend in the film thickness direction. Presently there is no evidence of record that "plating" versus "sputtering" results in an unobvious difference between similar magnetic films comprising Co and Fe wherein columnar crystals extend in the film thickness direction.

***Claim Rejections - 35 USC § 103***

10. Claims 3 – 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Funayama et al. as applied above, and further in view of Sasaki et al. (U.S. Patent App. No. 2003/0206369 A1) for the reasons of record as set forth in Paragraph No. 13 of the Office Action mailed on February 11, 2005.

11. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Funayama et al. as applied above, and further in view of Sato et al. (U.S. Patent App.

No. 2003/0151851 A1) for the reasons of record as set forth in Paragraph No. 14 of the Office Action mailed on February 11, 2005.

12. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kudo et al. (U.S. Patent No. 2002/0106533 A1) in view of Hitachi, LTD (JP 62-226413 A) and Funayama et al. ('982 A1) for the reasons of record as set forth in Paragraph No. 15 of the Office Action mailed on February 11, 2005. See provided Derwent Abstract Translation of JP '413 A.

Regarding the amended language of claim 8, lines 1 – 15, the Examiner notes that Kudo et al. disclose the claimed limitations as relied upon in the rejection set forth in Paragraph No. 15 of the Office Action mailed on February 11, 2005 since the amended language is identical to how the Examiner interpreted the claim language (see Paragraph No. 1 of the Office Action mailed on February 11, 2005).

Regarding the amended language of claim 8, lines 16 – 18, Funayama et al. disclose a plurality of columnar crystal grains provided side-by-side in a film surface direction with grain boundaries extending in the film thickness direction (*Paragraph 0148; Figure 16 and 17 and relevant disclosure thereto*).

Regarding the limitation(s) "plated", the Examiner notes that this limitation(s) are/(is a) process limitation(s) and is/are not further limiting in terms of the structure resulting from the claimed process. Specifically, in a product claim, as long as the prior art product meets the claimed structural limitations, the method by which the product is formed is not germane to the determination of patentability of the product unless an

unobvious difference can be shown to result from the claimed process limitations. In the instant case, regardless of how the film is deposited (e.g. plating or sputtering), the final structure of the film is substantially identical – a magnetic film comprising Co and Fe wherein columnar crystals extend in the film thickness direction. Presently there is no evidence of record that “plating” versus “sputtering” results in an unobvious difference between similar magnetic films comprising Co and Fe wherein columnar crystals extend in the film thickness direction.

Regarding claim 9, Funayama et al. disclose crystal diameters meeting applicants’ claimed limitations (*Paragraph 0150*).

Regarding claims 11, 18 and 19, Funayama et al. disclose layer thickness values significantly greater than the individual columnar grains (*~300 nm versus ~10 nm*), hence necessarily resulting in a “succession of plated microcrystals” and/or “overlying plated layers” (*Paragraphs 0080 and 0148 – 0160*).

Regarding claims 12 – 17, these limitations are process limitations in a product claim and are not further limiting in terms of the structure resulting from the claimed process for the reasons cited above.

13. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kudo et al. in view of Hitachi, LTD (JP ‘413 A) and Funayama et al. (‘982 A1) as applied above, and further in view of Sato et al. (‘851 A1).

Kudo et al., Hitachi, LTD and Funayama et al. are relied upon as described above.



None of the above disclose a surface roughness of the FeCo film meeting applicants' claimed limitations.

However, Sato et al. teach that it is known to form pole pieces of FeCo material to possess surface roughness values meeting applicants' claimed limitations in order to insure that the surface is sufficiently flat for use as a pole piece in a thin-film magnetic head (*Paragraphs 0102 and 0145*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Kudo et al. in view of Hitachi, LTD and Funayama et al. to use a FeCo layer meeting applicants' claimed surface roughness limitations as taught by Sato et al., since such a surface roughness is necessary to insure that the surface is sufficiently flat for use as a pole piece in a thin-film magnetic head.

14. Claims 12 – 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kudo et al. in view of Hitachi, LTD (JP '413 A) and Funayama et al. ('982 A1) as applied above, and further in view of Liu et al. (IEEE Trans. Mag., 36(5), 2000, 3479 – 3481).

Kudo et al., Hitachi, LTD and Funayama et al. are relied upon as described above.

While the Examiner maintains that claims 12 – 17 are process limitations in a product claim which fail to further limit the structure of the claimed product, the Examiner notes that Liu et al. provides explicit teaching that plated films containing organic additives, plated films avoiding sulfur contamination and plated films containing

a substantial portion of  $\text{Fe}^{2+}$  are known in the art, as well as the effect of current on the deposition concentrations of the film (*entire disclosure*).

Therefore, the Examiner deems that the process limitations of claims 12 – 17 are known process limitations that are not deemed to result in an unobvious difference between the claimed and prior art product produced by sputtering versus plating.

### ***Response to Arguments***

**15. The rejection of claims 1 - 8 under 35 U.S.C § 102(a) and/or 103(a) – Kanada et al. alone, or in view of Sato et al.**

**The rejection of claims 1 - 8 under 35 U.S.C § 102(a) and/or 103(a) – Kanada et al. alone, or in view of Sato et al.**

**The rejection of claims 1 - 8 under 35 U.S.C § 102(e) and/or 103(a) – Yamaguchi et al. alone, or in view of Sato et al.**

The above noted rejection has been withdrawn in view of applicant(s) arguments, which have been found persuasive. Specifically, applicant(s) argue that the perfection of applicants' priority application pre-dates the above references.

**16. The rejection of claims 1 and 6 under 35 U.S.C § 102(e) – Funayama et al.**

**The rejection of claims 3 – 5 and 7 under 35 U.S.C. 103(a) – Funayama et al. in view of various references**

**The rejection of claims 8 - 19 under 35 U.S.C. 103(a) – Kudo et al. in view of Funayama et al. and various references**

Applicant(s) argue(s) that "[i]n contrast to the three-phase, sputtered film disclosed by Funayama et al., the applicants disclose and claim a plated film that is formed by a plating process such that the columnar CoFe crystals align side by side", resulting in a patentable difference between the claimed and prior art products. The examiner respectfully disagrees.

First, the Examiner notes that applicants' claims are open to additional elements being present in the CoFe film. Should applicants wish to exclude additional elements, applicants are suggested to either claim a film consisting of CoFe or specify that the film is  $\text{Co}_x\text{Fe}_y$ , where the sum of x and y = 100 (hence excluding additional elements).

Second, the Examiner notes that "plating" versus "sputtering" are process limitations which are not germane to the determination of patentability of a *product* claim unless an unobvious difference can be shown for the claimed process conditions. Presently, the Examiner notes that there is no evidence of record that the claimed plating conditions results in an *unobvious* difference between the claimed and prior art products.

### ***Conclusion***

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

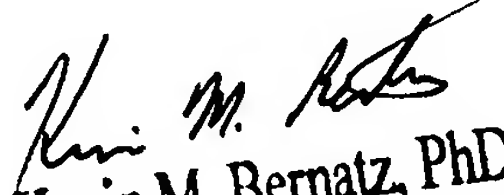
Applicants' amendment resulted in embodiments not previously considered (i.e. claims 9 - 19) which necessitated the new grounds of rejection, and hence the finality of this action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (571) 272-1505. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMB  
August 15, 2005

  
Kevin M. Bernatz, PhD  
Primary Examiner